IN THE CLAIMS

1. (currently amended) A current sensor for an apparatus, said current sensor comprising a conductor comprising an aperture therethrough and a plurality of Hall effect devices inserted at least partially within said aperture, said conductor is configured to generate a magnetic field having a pre-determined shape, each said Hall effect device configured to detect said pre-determined shape and generate an ~~output.~~output, and each said Hall effect device configured to be insensitive to magnetic fields having shapes other than the pre-determined shape.

2. (original) An apparatus in accordance with Claim 1 wherein said apparatus comprises a residential electricity meter.

3. (original) A current sensor in accordance with Claim 1 wherein said magnetic field has a pre-determined spatial dependence.

4-5. (canceled)

6. (original) A sensor in accordance with Claim 1 wherein said Hall effect device output comprises a non-linear component.

7. (currently amended) A sensor in accordance with ~~Claim 5~~Claim 1 wherein said plurality of Hall effect devices are separated by a pre-determined distance.

8. (cancel)

9. (original) A sensor in accordance with Claim 1 wherein said magnetic field comprises at least two magnetic field components having the same direction.

10. (currently amended) A current sensor for an apparatus comprising a conductor comprising an aperture therethrough and a plurality of Hall effect devices inserted at least partially within said aperture, said conductor is configured to generate a magnetic field comprising at least a first magnetic field component having a first direction and a second magnetic field component having a second direction different from said first direction, and a pre-determined shape, each said Hall effect device configured to detect said pre-determined shape and generate an ~~output.~~output, and each said Hall effect device

configured to be insensitive to magnetic fields having spatial dependencies other than a spatial dependence defined by the pre-determined shape.

11. (currently amended) A residential electricity meter comprising a voltage sensor and a current sensor, said current sensor comprising a conductor comprising an aperture therethrough and a plurality of Hall effect devices inserted at least partially within said aperture, said conductor is configured to generate a magnetic field having a pre-determined shape, each said Hall effect device configured to detect said pre-determined shape and generate an ~~output.~~output, and each said Hall effect device configured to be insensitive to magnetic fields having shapes other than the pre-determined shape.

12. (original) An electricity meter in accordance with Claim 11 wherein said electricity meter comprises a residential electricity meter.

13. (original) An electricity meter in accordance with Claim 11 wherein said magnetic field has a pre-determined spatial dependence.

14-15. (canceled)

16. (original) An electricity meter in accordance with Claim 11 wherein said Hall effect device output comprises a non-linear component.

17. (currently amended) An electricity meter in accordance with ~~Claim 15~~Claim 11 wherein said plurality of Hall effect devices are each separated by a pre-determined distance.

18. (cancel)

19. (original) An electricity meter in accordance with Claim 11 wherein said magnetic field comprises at least two magnetic field components having the same direction.

20. (currently amended) A residential electricity meter comprising a voltage sensor and a current sensor, said current sensor comprising a conductor comprising an aperture therethrough and a plurality of Hall effect devices inserted at least partially within said aperture, said conductor is configured to generate a magnetic field comprising at least a

first magnetic field component having a first direction and a second magnetic field component having a second direction different from said first direction, and a pre-determined shape, each said Hall effect device configured to detect said pre-determined shape and generate an ~~output.~~output, and each said Hall effect device configured to be insensitive to magnetic fields having spatial dependencies other than a spatial dependence defined by the pre-determined shape.

21. (currently amended) A method for sensing voltage and current in a residence, said method comprising:

providing an electricity meter comprising:

a voltage sensor; and

a current sensor, wherein the current sensor comprises a conductor comprising an aperture therethrough and a plurality of Hall effect devices inserted at least partially within the aperture, wherein the conductor is configured to generate a magnetic field having a pre-determined shape, ~~and each~~each Hall effect device is configured to detect the pre-determined shape and generate an ~~output.~~output, and each said Hall effect device configured to be insensitive to magnetic fields having shapes other than the pre-determined shape.

22. (original) A method in accordance with Claim 21 wherein providing an electricity meter comprises providing a residential electricity meter.

23. (original) A method in accordance with Claim 21 further comprising providing a conductor configured to generate a magnetic field having a pre-determined spatial dependence.

24. (original) A method in accordance with Claim 21 further comprising providing a Hall effect device output comprising a non-linear component.

25. (canceled)

26. (currently amended) A method in accordance with ~~Claim 25~~Claim 21 wherein said plurality of Hall effect devices are each separated by a pre-determined distance.

27. (cancel)

28. (original) A method in accordance with Claim 21 further comprising providing a conductor configured to generate a magnetic field comprising at least a first magnetic field component having a first direction and a second magnetic field component having a second direction the same as the first direction.

29. (currently amended) A method for sensing voltage and current in a residence, said method comprising:

providing a residential electricity meter comprising:

a voltage sensor; and

a current sensor, said current sensor comprising a conductor comprising an aperture therethrough and a plurality of Hall effect devices inserted at least partially within said aperture, said conductor is configured to generate a magnetic field comprising at least a first magnetic field component having a first direction and a second magnetic field component having a second direction different from said first direction, and a pre-determined shape, each said Hall effect device configured to detect said pre-determined shape and generate an ~~output.~~output, and each said Hall effect device configured to be insensitive to magnetic fields having shapes other than the pre-determined shape.